

Remarks by T. Keith Glennan at
Dedication Ceremonies of NASA's
Hugh L. Dryden Flight Research Center
Edwards Air Force Base, California

26 March 1976

Mrs. Dryden, Senator Moss, Congressman Ketchum,
Dr. Fletcher, Dr. Paine, Dr. Seamans, distinguished guests,
ladies and gentlemen --

It is a great personal honor for me to participate in these ceremonies. We are assembled here to honor the memory of an unusual human being--Hugh Latimer Dryden. He was a man who was highly respected in matters of science, government, international activities, religion and human affairs. But above all, he was greatly admired and loved by all who had the privilege of knowing him.

It fell to my lucky lot to be associated with Hugh Dryden very closely for two and one-half years as we initiated and completed the transition from the prestigious National Advisory Committee for Aeronautics to the fledgling organization now known so well as NASA--the National Aeronautics and Space Administration. I doubt that two men have often so genuinely and completely shared in the designing, developing and leading of a great enterprise as did Hugh and I.

I could recite personal reminiscences for a long time but that would be a selfish action on my part. As our mutual friend and colleague, Dr. Robert Seamans, said at the ceremonies at Johns Hopkins University when Dr. Dryden's papers were given to that institution--"Hugh Dryden was a man for all times." Need one--or can one--say more? Because so many well spoken laudatory words have been written or spoken about Dr. Dryden, I find it difficult to compete with those more eloquent than I. Accordingly, I will quote liberally from others who have preceded me.

On the assumption that everyone present is not familiar with the experiences and accomplishments of the man for whom this center is now named, let me very briefly review

some of the highlights of Dr. Dryden's remarkable career. At the age of 14, he graduated from Baltimore City College, first in his class of 172. His scholarly competence had already been recognized. The newspapers reporting the event described him as a "near wizard in mathematics." College and graduate study must have seemed matters to be dealt with vigorously and expeditiously for he received his Ph.D. in physics and mathematics at Johns Hopkins in 1919 before he had reached his 21st birthday. This record was attained without the acquisition of the stamp that usually attaches to the classic "grind." His yearbook at Hopkins noted that Hugh's habitual expression was a grin--not a smile, not a smirk--but an undoubted, unqualified and unmitigated grin. The sincerity and quality behind that expression was to carry with him through the rest of his life.

His early intellectual interests were further developed and sharpened by the age within which he lived. His scholarly and research contributions to the rapidly accelerating developments in aeronautics were many and important. His Ph.D. thesis on wind tunnel turbulence, as Dr. Seamans has noted, "developed an imaginative analysis of aerodynamic flow and equally significant, stimulated further sophisticated work in the field." An early portent of things to come in the experimental program of this very center now bearing his name took place during the 20's and 30's while Dr. Dryden was Chief of the National Bureau of Standards, Aerodynamics Physics Section. Much of his interest centered on pioneering studies of the effect of supersonic speeds on aircraft. But his interests were broad enough to encompass problems of a more prosaic nature as witness his leadership for three years of the NBS program on building materials which ultimately paved the way for new construction methods for low cost housing.

In World War II he was charged with the development of a radar-guided missile, in effect, a glide bomb. The Dryden model, called the Bat, was the only American missile of its type to see combat, and the Navy used it effectively toward the end of the war. That project moved Dr. Dryden out of the laboratory and wind tunnel and into the realm of administration and national policy.

In 1947, Dr. Dryden assumed the leadership of the NACA after almost 30 years of impressive work with the National Bureau of Standards. He gained an international reputation in aerodynamics as an expert on wind tunnel effects, a leading researcher on turbulence, boundary-layer flow and the characteristics of airfoils at high speeds.

At the NACA, this amiable and unassuming Marylander worked, not above others, but with others on all of the aeronautic problems of the post-war years. He and his colleagues evolved the unitary wind tunnel plan, saving millions of dollars and millions of hours of duplicating effort. He played a key role in guiding policy and development of that series of high speed research aircraft that flew from this then-remote desert base. He presided over testing of all the X-model rocket planes, culminating in the X-15 which flew under NASA colors. His mark was clearly imprinted on experimental aircraft of the STOL and VTOL types. And he labored on the critical reentry phase for missiles, resulting in the development of the ICBM and the techniques for returning manned spacecraft safely to earth.

I think that the character and wisdom of Hugh Dryden were best illustrated in what I might call the great "Sputnik" crisis. On October 4th, 1957 the Soviet Union launched into orbit a satellite of modest size. Dryden, the NACA's scientists and engineers and others knowledgeable in aeronautics and concerned with the activities of the International Geophysical Year, were well aware that the Russians had a capability of putting up an artificial earth satellite. In fact, Moscow had already announced its intentions of doing just that, while we were preparing our own Vanguard.

But the impact of those signals sent by Sputnik was enormous and pervasive. It almost caused a wave of national xenophobia in the United States. We, the most highly advanced technological nation in the world, had been humbled. We had to do something to counter the Soviet success.

As was the case more than 20 years earlier in the debates over the establishment of an agency to guide and manage the nation's further development of nuclear energy, the Congress finally agreed with the Executive Branch that a civilian rather than a military organization should be given the task of creating the nation's space program. And NACA was the instrument chosen to serve as the base upon which the new organization would be erected.

As the then-Director of NACA, Dryden came in for much of the heat during those debates. He was called up to Capitol Hill, of course, to face the space-related committees. The Congressmen, goaded by the press, were full of ideas. One was a "crash program," which would involve packing a man into the nose cone of a ballistic missile and firing him into sub-orbit.

Dr. Dryden patiently told the involved committees that dollars cannot buy yesterday and that money spent profligately for an ad hoc project would result in an almost absolute waste. Today I suspect that no one doubts that Dr. Dryden's determination to avoid such proposals established the basic philosophy on which we were to develop the national space program.

With the formation of NASA I was named its first Administrator. I had accepted the post only after assuring myself that Hugh Dryden would join with me in the new adventure. He became Deputy Administrator, even though he had attractive offers elsewhere; he knew that he was badly needed during the difficult transition period for his colleagues of NACA to the new agency. As always, Dryden's first priority was to serve the national interest.

There were tough years ahead, changes of administration, sweeping overhauls of the space agency, the breadth of politics and the subtle pitfalls of bureaucracy. Through it all, the Deputy Administrator remained unruffled, maintaining the sense of order and bringing out the best in his people.

When the White House named James E. Webb as NASA's second Administrator, he took the job only on the condition that Dryden remain as his Deputy. It was a busy time, planning for Mercury and then the Gemini manned space flights, a myriad of unmanned satellite projects, such as Ranger and Surveyor, the continuous efforts in aeronautics, and the long-term preparation for circumlunar flights and finally, the supreme moment of lunar landing.

Those were the days, too, when the respect of scientists and engineers the world over made him a natural to represent NASA in initial discussions with the Soviet Union concerning possible cooperative space activities.

That crowded schedule spanned the years between 1961 and 1965. Since October of 1961, Dryden had known that his days on earth were to be short. In that month, exploratory surgery had determined that he had an incurable malignancy. His reaction was to step up his schedules and to make more and more commitments. He flew constantly, sometimes conducting business at NASA headquarters in Washington in the morning, then taking a plane to New York, Chicago or Cleveland to address a professional group. He might be back in Washington for late-afternoon appointments and then go to a black tie dinner and act as a keynote speaker.

Always, he reminded NASA people and others that "things" were not the cause of the world's troubles. The aircraft that bomb a city are also capable of bringing together heads of government to discuss peace. "Things," he made clear, have no mind of their own and are therefore amoral.

What Hugh was saying, I believe, is that scientific knowledge and power are not intrinsically good or evil. They are the "instruments" that can be used for either. He argued that the "perfect" machine might some day be built, but there is nothing in the Judeo-Christian ethic that says a "perfect" man is anywhere on this earth. And the perfect machine might well be misused by imperfect man.

He was laden with scientific honors and prizes: he had honorary degrees from many major universities. But he seemed to cherish one award more than all of these. In 1962, three years before his death, the Methodist Union named Hugh Dryden the Methodist Layman of the Year. He had belonged to the church since his childhood on the eastern shore of Maryland and had been a lay preacher.

I said earlier that I would quote from other and distinguished friends of Dr. Dryden's. Because Hugh was a member for many years of the National Academy of Sciences, I quote now in part the resolution adopted by the Council of the Academy at the time of Hugh's death.

"Although the service and devotion of Hugh L. Dryden to the National Academy of Sciences, where he was ten years Home Secretary, twelve years our colleague in the Council, and twenty-one years a member of the Section of Engineering, have in our time rarely been equalled and certainly not surpassed, they represent only a portion of his service and devotion to several national institutions closely linked to the welfare of our people. He worked with extraordinary dedication and effectiveness for the National Bureau of Standards, the Office of Scientific Research and Development, the National Advisory Committee for Aeronautics, and the National Aeronautics and Space Administration. His magnificent service with NASA as an architect and principal contributor was to a major extent responsible for placing this nation in a position of world leadership in peaceful space exploration. Awarded the Medal of Freedom for his contribution to his country in time of war and the National Medal of Science for his contributions in time of peace, he earned

great distinction for his outstanding work as a scientist-engineer, public administrator and a leader of those who bring knowledge and understanding to serve and benefit mankind. In achieving so much for his country and its institutions, he gave of himself without thought of self.

Again -- and speaking from his post as Treasurer of the International Union of Theoretical and Applied Mechanics, Professor W. T. Koiter of Delft, Holland, wrote in part, to Mr. Webb -- "I have known Dr. Dryden for many years, and I can therefore appreciate to some extent the severity of the loss which American science in general, and your administration in particular, has suffered through his premature death. Nobody is, of course, indispensable, and no one could be more aware of this fact than Dr. Dryden in his extreme modesty. Nevertheless, I fear that it will be very difficult to replace him by someone equally qualified, both from the scientific point of view and from the point of view of human wisdom. Apart from his scientific achievements, I have always been deeply impressed by Dr. Dryden's unobtrusive commonsense and by his unfailing judgement in arriving at appropriate decisions concerning international scientific collaboration."

Hugh Dryden drew strength from his thoughtful understanding of the past. But he was constantly looking to the future. A short quotation from one of his sermons reveals his faith in man and his future. "None of us knows what the final destiny of man may be, or if there is any end to his capacity for growth and adaptation. Wherever this venture leads us, I am convinced that the power to leave the earth--to travel where we will in space and to return at will--marks the opening of a brilliant new stage in man's evolution." Each of us today needs that same article of faith as we go about our daily and sometimes apparently mundane lives.

Let me end on a more personal note. I have never known a more humble leader of men. I never heard him raise his voice in anger, speak ill of men with whom he may have had disagreements--yet I do not recall that he lost many debates. Hugh was a man of wisdom and generosity--a man of inner spiritual strength who did not hide his belief in his Creator nor his concern for the welfare of his fellow-men. When he spoke he meant what he said. He was, above all, a gentle man; a faithful companion to his lovely wife, Libby--herself a truly gentle lady. We are each the better for having had the privilege of knowing and working with this great and unusual man whose memory we honor today--Hugh L. Dryden!